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The effect of labeling disfluencies as 'stuttering' and contingent and yoked "wrong" on the disfluencies of normal speakers

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Title: The Effect of Labeling Disfluencies as 'Stuttering' and Contingent and Yoked "wrong" on the Disfluencies of Normal Speakers.

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A labeling variable suggested by Wendell Johnson's "diagnosogenic" theory of the onset of stuttering was included in this study of the disfluencies of normal speaking college students in order to explore further the hypothetical relationship between normal disfluency and the onset of stuttering. A total of 60 Ss were randomly assigned to the following groups, each containing 10 Ss: I. Labeling Chastisement plus Contingent "wrong;" II. Labeling Chastisement plus Yoked (non-contingent) "wrong;" III. Labeling Chastisement - No "wrong;" IV. No Labeling Chastisement - Contingent "wrong;" V. No Labeling Chastisement - Yoked "wrong;" VI. No Labeling Chastisement - No "wrong" (control). All Ss read aloud for 23 minutes, a three minute Baseline Period in which no experimental manipulations were introduced, followed by a 20 minute Experimental Period. Following the Baseline Period, Ss in the three Labeling Chastisement Groups were chastised for "stuttering" and asked to try not to. During the Experimental Period, Ss in the two Contingent "wrong" Groups were presented

"wrong" immediately following a repetition or prolongation. A yoked design was used, which enabled the Ss in the Yoked "wrong" Groups to hear this same "wrong," though non-contingently throughout their reading.

The results showed that neither the Labeling Chastisement procedure nor non-contingent (Yoked) "wrong" caused an increase in disfluencies as predicted. The Ss in the Contingent "wrong" Groups decreased disfluencies during the Experimental Period, supporting the results of earlier studies which had reported that response-contingent stimuli reduce the disfluencies of normal speakers, while non-response-contingent stimuli have no effect upon disfluencies.

Although this observation is in direct opposition to many onset of stuttering theories which posit that stuttering originates, in part, when the normal disfluencies of children are punished by overly-critical parents, it was noted that several theoritically-important differences exist between normal speaking college students and young children learning to talk. Normal speaking adults have had many years of speaking experience, during which time they have developed large verbal repertoires, enabling them to replace an undesirable response (disfluency) with a more rewarding one (fluency). Young children, on the other hand, have not yet mastered the complex skills required to speak correctly, and are likely to have an extremely narrow range of verbal response alternatives. Consequently, these young children, because of their lack of a correct response, may be more likely than normal adult speakers to respond to the disapproval of their disfluencies by altering their behavior in a maladaptive manner.

Some of the normal speakers in this study showed an extreme vulnerability to the experimental manipulations as well as anticipation of disapproval from the E. Anticipation of speech difficulty and vulnerability

to environmental influences are two factors which some theorists feel play an important role in the onset of stuttering. However, the Ss in this study who showed these behaviors were able to speak fluently when under pressure from the E to do so.

Because of the vast differences between normal speaking adults and young children learning to talk, it was suggested that further experimentation with normal speaking adults engaged in verbal tasks in hopes of gaining insight into the hypothetical relationship between normal disfluency and the onset of stuttering might prove fruitless. Two alternative approaches were suggested. First, detailed observations of the interactions between adults and children in natural settings would undoubtedly prove enlightening. The second suggested approach calls for the laboratory study of adults engaged in a non-verbal task which involves interactions and requires behaviors comparable to those involved in the learning of speech by young children. Nine variables were suggested which would provide an ideal paradigm for this type of study.

THE EFFECT OF LABELING DISFLUENCIES AS 'STUTTERING' AND CONTINGENT AND YOKED "WRONG" ON THE DISFLUENCIES OF NORMAL SPEAKERS

by

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Somebody once said that play is not to be taken seriously. Well, the evidence seems to indicate that taking the game too seriously causes little disfluencies to big stutterings grow. Similarly (to me, everything is similar to stuttering), without much tender, loving care from my wife and friend, Gin, I'm afraid I might have taken this task too seriously. It's a perplexing task, trying (is that valid, Dr. Casteel?) to understand all that's involved in stuttering behavior, but Gin was always reminding me that my only problem was that I thought there was a problem. She also typed all the drafts, proofread, listened to tapes for reliability checks, lettered the graphs, and made the coffee. Thank you!

Two other people, both friends, were also a great help to me, Jerry Guthrie and Bob Casteel. Dr. Guthrie is a Professor in the Psychology Department at Portland State, a giver of great advice, and served as the chairman of my committee. Dr. Casteel is a Professor in the Speech Pathology Department at Portland State, founder of the best stuttering clinic in the United States, and served on my committee. They both know how much help they have been to me. Thank you!

Thanks also to Roger Jennings who, as the third member of my committee never let me forget that psychologists are scientists.

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TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Speech pathologists, as well as some psychiatrists and psychologists have for many years been concerned about the causes of stuttering. In light of extensive reviews by Hill (1944) and Perkins (1970) which report that stutterers are not physiologically distinct from non-stutterers, stuttering theorists have searched for other possible causes of stuttering. Although many different theories have emerged from research and clinical observation, most contemporary theories have at least two main points of agreement. First, stuttering is a complex phenomona, caused and maintained by a variety of factors. Second, a large portion of what we call stuttering is learned, and therefore can be understood, and modified by the proper application of learning theory and principles.

I. THEORETICAL FOUNDATIONS

Basic to most of the theories which hold that stuttering is a learned behavior is convincing evidence (Davis, 1940; Branscom, Hughes, and Oxtoby, 1955; England, 1955) that the speech of most young children is normally highly disfluent, even in non-stressful, free-play situations. With this in mind, Wischner (1950) feels that if a child's normal speech disfluencies are met by disapproval from his parents, it is possible that

speech associated anxiety may develop. This learned anxiety interferes with the child's desire to communicate, and may result in changes in the child's speech pattern. Those patterns which are reinforced by anxiety reduction may eventually become a stable part of the child's speaking behavior.

Similarly, Shames and Sherrick (1963) maintain that disfluency and stuttering are probably continuous response forms. These theorists feel that a listener who continuously punishes a child's disfluencies may become a conditioned aversive stimulus to that child, causing struggle behaviors associated with the act of speaking which are different from the original disfluency. Indeed, these behaviors are emitted in the hope of terminating the listener's aversive reaction to his disfluency, and, if successful, are reinforced. These same theorists posit that disfluencies may also be reinforced by certain other consequences, such as, increased attention from parents. Other theorists (e.g., Sheehan, 1958; Bloodstein, 1958) also feel that the onset of stuttering is a learned modification of normal disfluencies.

The most extensive and comprehensive research done on the causes of stuttering was performed by Wendell Johnson and his associates over a period of 23 years and reported in full in the book, The Onset of Stuttering (1959). This group studied stutterers and non-stutterers and the families of both in an attempt to determine the variables which may be active in the onset of stuttering. Their results again suggest that stuttering develops out of normal disfluencies, and that the interaction between speaker and listener is the all-important variable. In fact, Johnson (1959) says, "the listener does more than the speaker to set in motion the interactions essential to the creation of the stuttering problem (p.262)."

Johnson, et. al. (1959) arrive at this conclusion on the basis of evidence which indicates that stutterers and non-stutterers are noticably different only in that the parents of stutterers are "motivated to evaluate . . . nonfluencies as unacceptable, or distressing, to classify them as stuttering, and to react . . . to them and the child accordingly (p.260)." Consequently, these same parents rate more samples of the speech of young children as stuttered, are more concerned about stuttering as a family problem, and have a more unrealistic sence of fluency norms among young children than parents of non-stutterers (Johnson, 1959). In short, the parents of stutterers seem to be overly-concerned and overly-critical about their childrens' speech, especially the disfluencies in that speech.

According to Johnson, these parents, because of their excessive concern over their child's speech, interpret normal disruptions of that speech as being abnormal, and evaluate them as "stuttering." They therefore classify their child as a "stutterer" and interact with him in a way that communicates to the child some degree of dissatisfaction with his speech. Johnson suggests that these parents create a situation in which a child, usually tolerant or even ignorant of his own nonfluencies, may become increasingly frustrated by them, and in an attempt to be fluent may speak with even more hesitation and interruption. The parent may respond by becoming more critical of the child's increased disfluency, causing the child to become increasingly apprehensive about his disfluency, and speaking with more hesitation, and so on.

All of the above theorists agree, to some extent, that stuttering is a learned modification, outgrowth, exaggeration, or extension of what began as normal disfluency; however, there is little agreement on the exact

process that is involved. Bloodstein, Alper, and Zisk (1965), noting the similarity between these and other theories on the onset of stuttering, point out that, " . . . the choice of several major points of view currently being held about the onset of stuttering hinges on the manner in which stuttering and normal disfluency are related (p.32)."

II. RELEVANT RESEARCH

Many experimenters, in exploring the relationship between normal disfluency and stuttering, in order to determine if that relationship is a pivotal one, have attempted to demonstrate that the disfluencies of normal speakers are subject to experimental manipulation. In the first reported experiment of this sort, Hill (1954) attempted to study what effect non-response contingent shock might have upon the speech of non-stutterers. During each trial, Ss were required to perform a series of motor tasks upon appropriate light signals while simultaneously verbalizing about a TAT card. After initial training, Ss were warned that they might be given electric shocks. Midway through the experimental trials the Ss were shocked upon presentation of the motor task signals. Speech disturbance was scored on a rating scale both before and after the shock. The results are difficult to interpret because it cannot be determined whether the slight increase in disfluency ratings were due to the effects of the shock or the ambiguous stimuli preceding the motor activity.

Savoye (1959), using a limited number of Ss, found that disfluencies of normal speaking adults increased in the presence of a conditioned aversive stimulus. In this study, experimental Ss engaged in a reading task were presented a 10 second tone every two minutes, followed immediately by a shock. These Ss showed more disfluencies during the tone and

the 10 second period following the tone than did the control Ss who received no shock. There was no significant difference in number of disfluencies between the experimental and control groups during the period midway between two tone-shock pairings, suggesting that the disruptive effects of the shock were limited to a period of time immediately surrounding presentation of the tone-shock, and did not generalize to the entire experimental session.

Stassi (1961) tested the effects of verbal praise and reprimand upon the disfluencies of normal speakers. The Ss read nonsense words aloud and were told after each response whether their pronunciation had been "right" or "wrong." Actually, the presentation of "right" and "wrong" was preprogramed and was not affected by the accuracy of the Ss' response. The Ss each received four different prearranged schedules of stimuli, ranging from 100% "wrong" to 100% "right." The results suggested that Ss were more disfluent when the word "wrong" was presented on a non-response-contingent basis than when "right" was presented under the same conditions. However, the omission of a control group renders the results equivocal, because it cannot be determined whether the difference in disfluency ratings between the conditions was due to increases in disfluency due to "wrong," decreases in disfluency due to "right," or a combination of both.

A feature common to the three experiments mentioned above is that in each the stimuli were delivered to the S on a non-response-contingent basis, that is, not as a consequence of a response made by the S. Flanagan, Goldiamond, and Azrin (1959) were the first experimenters to report research studying the effects of response-contingent consequences upon the disfluencies of normal speaking Ss. Like Shames and Sherrick (1963), they argued that, " . . . breaks, pauses, repititions, and other

nonfluencies can be considered operant responses, having in common with other operants the characteristic of being controllable by ensuing circumstances . . . it should be possible to turn nonfluencies of normal subjects into chronic stuttering (p.979)." These experimenters reported that they were able to increase remarkably the disfluencies of one S by making the removal of pulses of electric shock contingent upon a disfluent response. Unfortunately, the experiment was reported so briefly that some important aspects remain unclear, and the fact that the results reported were produced by only one of four Ss certainly limits the possibility of generalizing the results.

More recently, experimenters at the University of Minnesota (Siegel and Martin, 1965a, 1965b, 1966, 1967, 1968; Martin and Siegel, 1969; Brookshire and Martin, 1967; Brookshire, 1969) have been involved in a program of research designed to study more closely the variables active in the modification of disfluencies in normal speakers. The Ss in all of these experiments were normal speaking college students who were pretested, assigned to high or low disfluency level groups, and then asked to read during Baseline, Treatment, and Recovery Segments. In the first of these studies, Siegel and Martin (1965a) compared the effects of delivering a shock to the Ss immediately following a disfluency (contingent) with the effects of presenting a shock according to a predetermined schedule (noncontingent). The results showed that contingent shock decreased disfluencies below Baseline by an average of 19%. However, in a similar experiment, an even more dramatic reduction in number of disfluencies was produced when the tape-recorded word "wrong" was used in place of shock (Siegel and Martin, 1965b). In this study, Contingent Ss heard "wrong" after each disfluency, while Random Ss heard "wrong" at selected intervals

during the Treatment Segment. Again, Contingent Ss decreased disfluencies during the Treatment Segment, this time by 38%, and then increased disfluencies during the Recovery Segment. Non-contingent presentation of "wrong" had no effect upon disfluencies.

Next, Siegel and Martin (1966) demonstrated that in addition to "wrong," a doorbell buzzer and the word "right" would also act like punishers in that they reduced disfluencies when applied contingently (although the effect of "right" was not significant). The authors interpret these results as suggesting that perhaps "normal speakers may come to regard their own disfluencies as evidence of poor vocal performance. If this were the case, we might anticipate that any events that called the speaker's attention to his disfluencies might serve to decrease their occurance (p.215)." Some support for this hypothesis was obtained from another group of Ss who were told following the Baseline Segment that they "had a number of disfluencies," and when they continued reading to "try not to make mistakes." For all 10 of these Ss, there was a decrease in disfluencies following these instructions that was greater than that obtained in any of the other conditions.

Continuing this series of studies, Siegel and Martin (1967) found that contingent presentation of "wrong" during spontaneous speech would decrease the disfluencies of high disfluency level Ss. Interestingly, for low disfluency level Ss, contingent presentation of "wrong" had no effect. Brookshire and Martin (1967) found that "no," and "huh-uh," as well as "wrong" served to decrease disfluencies of normal Ss during a reading task.

More recently, Siegel and Martin (1968) found that the effects of presenting "wrong" contingent upon each disfluency could be increased by

also instructing the Ss to read with fewer disfluencies. In this study 104 normal speaking college students were randomly assigned to the following four groups: 1). "100%" Group - Ss heard "wrong" after each disfluency; 2). "25%" Group - Ss heard "wrong" following every fourth disfluency; 3). Instructions Group - Ss were simply urged to speak without disfluencies; 4). Instructions plus "100%" Group - Ss were urged to be less disfluent and in addition were presented "wrong" following each disfluency. High disfluency level Ss in the "100%" Group, Instructions Group, and Instructions plus "100%" Group all significantly reduced disfluencies from the Baseline to Treatment Segments as did the low disfluency level Ss in the Instructions plus "100%" condition. Low disfluency level Ss, with the exception of the Instructions plus "100%" Group, were generally unaffected by the manipulations.

Siegel (1970), in an excellent review of the literature relevant to the modification of disfluencies in normal speakers, points out that the most striking aspect of his own research "has been the regularity with which a variety of stimuli have successfully punished [decreased] disfluencies (p.689)." Although earlier experiments were generally poorly designed and controlled, they consistantly reported opposite results, that is, that aversive stimuli caused an increase in disfluencies (Hill, 1954; Savoye, 1959: Stassi, 1961). The critical difference between these earlier studies and the Minnesota studies was the contingency between the stimuli and the Ss' disfluency. In the Minnesota studies, stimuli delivered contingent upon disfluencies caused a decrease in those disfluencies. On the other hand, Hill (1954), Savoye (1959), and Stassi (1961) all reported an increase in disfluencies when stimuli were presented on a non-response-contingent basis.

It appears on the basis of this research that contingent presentation of an aversive stimulus will cause a decrease, while non-contingent presentation of an aversive stimulus will cause an increase in the disfluencies of normal speakers. However, Siegel and Martin (1965a, 1965b, 1967) and Brookshire and Martin (1967) have repeatedly failed to demonstrate that non-contingent stimuli have any effect at all upon the disfluencies of normal speakers. What these contradictory results mean is open to debate, but after close examination of the studies in question it appears that the more recent, closely controlled experiements by Siegel and Martin and others at the University of Minnesota offer far more convincing evidence than the older studies, whose results were ambiguous at best. The most reliable experimental information, then, concerning the modification of disfluencies of normal speakers indicates that a variety of stimuli, when presented contingently, will reduce disfluencies, while non-contingent presentation of these same stimuli appears to have no effect.

These conclusions are intuitively surprising, and tend to discredit the onset of stuttering theories mentioned earlier which maintained that stuttering originates, in part, when a listener or listeners react negatively to some aspect of the child's disfluent speech (Wischner, 1950; Bloodstein, 1958; Sheehan, 1958; Johnson, 1959; Shames and Sherrick, 1963). However, it should be pointed out that the variable mentioned repeatedly by Johnson (1959) to be essential to the onset of stuttering is conspicuously absent in the Siegel and Martin (1965a, 1965b, 1966, 1967, 1968) studies. This variable is what can appropriately be called the "Labeling Chastisement" variable. According to Johnson,

> The point of origin of the problem of stuttering in a given

> instance is to be observed, or reported, as a perceptual and judgmental reaction of a listener to something done by a speaker . . . as 'stuttering' or the equivalent. Then, having decided that the speaker is 'stuttering' the listener classifies the speaker as a 'stutterer' (Johnson, 1959, p.236).

III. PURPOSE

Hypotheses

The present experiment was designed to study the effect that slight modifications of the experimental paradigm developed by Siegel and Martin (1965b, 1968) might have upon the disfluencies of normal speaking college students, in order to explore further the hypothetical relationship between normal disfluency and the onset of stuttering. In particular, it was hypothesized that:

1. The introduction of a Labeling Chastisement procedure which admonishes normal speakers for "stuttering" will cause an increase in disfluencies.

2. The increase in disfluencies of normal speakers as a result of a Labeling Chastisement procedure will be intensified when followed by non-response-contingent presentation of "wrong."

Rationale

Siegel and Martin (1968) approximated a "labeling chastisement" procedure by instructing Ss not to "repeat or interject," whereas, in the present study, Ss were admonished for "stuttering." The critical difference between these procedures is the manner in which similar disfluencies are described. Siegel and Martin (1968) made statements to their Ss which were highly descriptive of the response in question. On the other hand, the present E made statements which were merely indicative of feelings or

judgements about the Ss' speech. This difference is precisely the difference between the manner in which Johnson contends the parents of non-stutterers and the parents of stutterers describe their children's speech (Johnson, 1959).

Although Siegel and Martin (1968) included an Instructions plus Contingent "wrong" condition in their study, they failed to include an instructions plus random "wrong" group. The present study, however, includes a comparable Labeling Chastisement plus Yoked "wrong" Group. It was hypothesized that Ss in this group would commit more disfluencies than those in all other groups. This prediction was made for two reasons. First, the assumption was made that the Labeling Chastisement procedure would serve to strengthen the aversive properties of the word "wrong" by supplying a point of reference for "wrong." This assumption is supported by results discussed earlier which indicated that contingent "wrong" was much more effective in reducing disfluencies when combined with instructions not to "repeat or interject" (Siegel and Martin, 1968). It was reasoned that subjects hearing the Labeling Chastisement prior to the "wrongs" would feel that "wrong" was telling them that they were doing the very thing that they were earlier asked not to do. On the other hand, "wrong" by itself has no clear-cut meaning, other than vague disapproval.

Second, if because of the Labeling Chastisement procedure, "wrong" becomes a more aversive stimulus, then it should, when presented non-contingently, cause an increase in disfluencies. Although Siegel and Martin (1965a, 1965b, 1967) and Brookshire and Martin (1967) reported no significant changes in disfluency when stimuli were presented on a non-response contingent basis, a pilot study by this author found that Ss who received non-contingent "wrong" committed slightly more disfluencies than

a control group.[1] It was reasoned, therefore, that if the "wrong" was made more meaningful by the addition of the Labeling Chastisement procedure, then it's effect upon disfluencies would be intensified, resulting in a significant increase in disfluencies.

1. Unpublished study entitled "The effect of auditory stimuli on the disfluencies of normal speakers during prolonged reading."

CHAPTER II

METHOD & TECHNIQUE

Subjects

The Ss were 60 volunteer normal speaking college students (15 females and 45 males) drawn without regard to sex from undergraduate psychology classes. Unlike the Siegel and Martin (1965a, 1965b, 1966, 1967, 1968) studies, the Ss were not classified according to pre-experimental fluency level. Although in these same studies Siegel and Martin demonstrated consistently that high disfluency level Ss decrease disfluencies more readily under appropriate contingencies than do low disfluency level Ss, there is no data which indicates that pre-experimental fluency level is a variable influencing the increase of disfluencies. In order to produce a sample of normal speaking college students, stutterers were asked not to participate.

The 60 Ss were randomly assigned to the following groups, each containing 10 Ss:

I. Labeling Chastisement plus Contingent "wrong"

II. Labeling Chastisement plus Yoked "wrong"

III. Labeling Chastisement - No "wrong"

IV. No Labeling Chastisement - Contingent "wrong"

V. No Labeling Chastisement - Yoked "wrong"

VI. No Labeling Chastisement - No "wrong" (control)

Apparatus

Figure 1 shows the experimental arrangement which consisted of two sound-treated experimental rooms equipped for auditory and visual monitoring from a third, control room. Two Ss, in separate rooms, read aloud into Electro-Voice RE15 microphones and were recorded on separate tracks

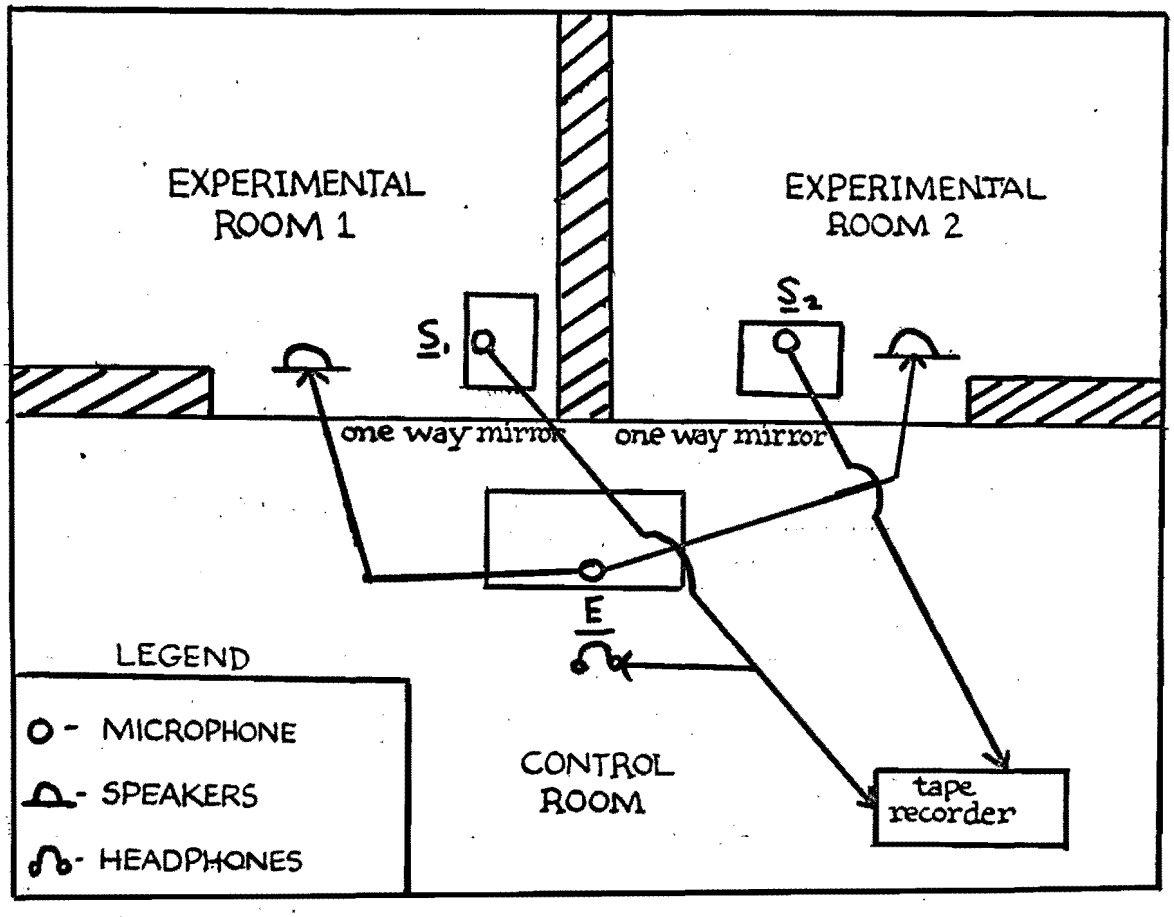

Figure 1. Experimental Facility

of an Ampex stereo tape recorder, while the E monitored the sessions from the control room. The "wrong" stimulus was produced vocally by the E, a male, into a microphone, and was heard in both the experimental rooms

through overhead speakers at 76 DB(A) at the Ss head level (as measured by a General Radio Sound Level Meter type 1565-A). The E listened to one of the Ss through Telex headphones and counted disfluencies by hand. The instructions were read by the E at the beginning of each session, but the Labeling Chastisement statement was pre-recorded on a Sony tape recorder. A stopwatch, operated by the E, was used to time the sessions.

Design

Figure 2 shows the yoked design used in the experiment. Two Ss were run at the same time, although in separate rooms. The Ss from Groups I and IV (Contingent) were run with the Ss from Groups II and V (Yoked); the Ss from Group III were run at the same time as Ss from Group VI, but

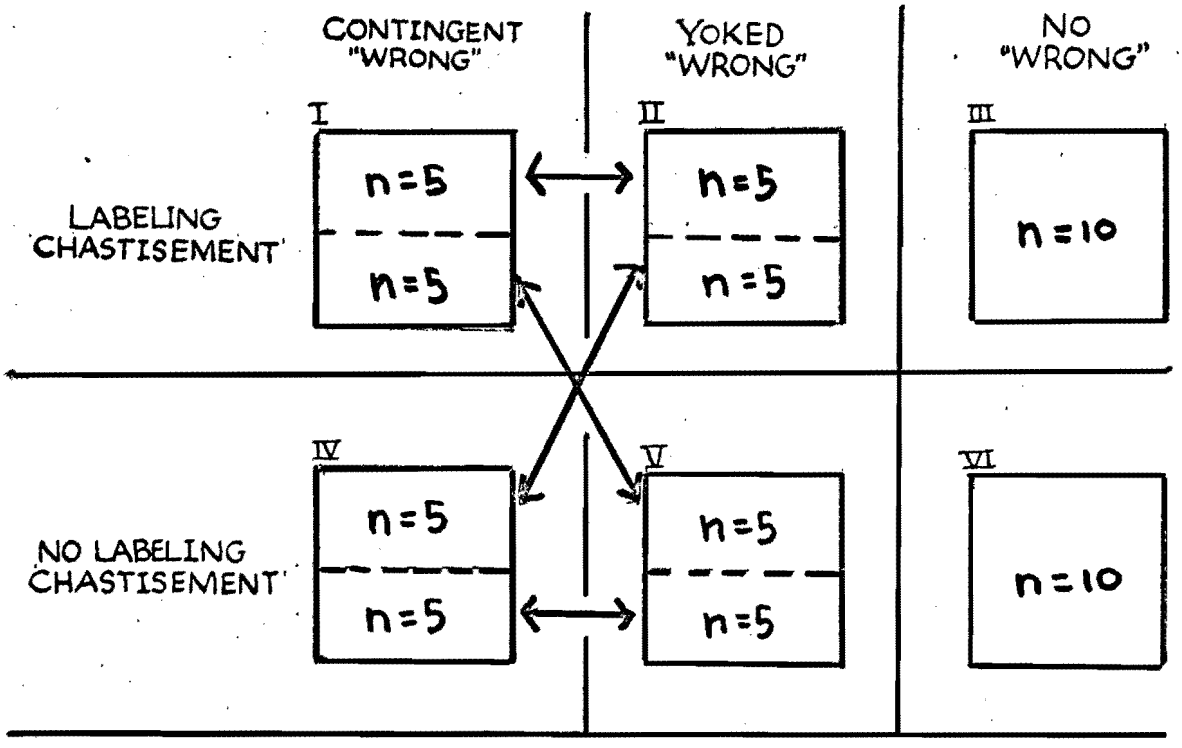

Figure 2. The experimental design showing the cross-yoking between the Contingent and Yoked Groups.

these Ss were not yoked together. The E listened only to the S in Room 1 and during the Contingent Groups' Experimental Period said "wrong" immediately following a disfluency. The "wrong" was heard through overhead speakers in both rooms, with the effect being that Contingent Ss (Groups I and IV) heard "wrong" immediately after each disfluency, while the Yoked Ss (Groups II and V) heard "wrong" intermittently throughout their reading.

This yoked design allows for greater control than does the predetermined random presentation of non-contingent stimuli used by Siegel and Martin (1965a, 1965b, 1967). With the yoked design, both Contingent and Yoked Ss heard the same "wrong" at the same time. A possible problem is introduced by the use of a yoked design because of the fact that the Yoked Groups' performance may be somewhat dependent upon the performance of the Contingent Group that it is yoked to. To control for this, a cross-yoking procedure was employed in which each Yoked Group was yoked to both Contingent Groups (see Figure 2). An obtained correlation of .17 between the Contingent and Yoked Ss' disfluency counts indicates that the Yoked Ss performed independently of the Contingent Ss with which they were yoked.

Procedure

The Ss were seated at desks in the experimental rooms. On each desk was a microphone and a copy of On the Beach, by Nevil Shute,[2] open to Chapter 1, but turned over. Both Ss were then read the following instructions:

> This experiment is concerned with certain aspects of the verbal behavior of college students. Your task is simply to read

2. Nevil Shute. On the Beach. New York: Morrow, 1957.

> aloud from a passage. Once I ask you to begin, continue reading until you are specifically asked to stop reading. I will be listening from the other room. When I say "start" please turn over the reading material and begin reading aloud. It is very important that you continue reading aloud until I specifically say the words "stop reading." Now, I'll repeat that, please continue reading aloud until I specifically say the words "stop reading." Do not stop reading for a prolonged period of time at any other time. Okay, start reading.

All Ss read for 23 minutes, the first three minutes comprised a Baseline Period, and the next 20 minutes the Experimental Period. No experimental manipulations were introduced during the Baseline Period, which allowed the E to record the Ss pre-experimental fluency level.

Following Baseline, Ss in Groups I, II, and III heard the following Labeling Chastisement, pre-recorded on tape:

> Stop reading! When you volunteered for this experiment you assured me that you did not stutter, but during the last few minutes you stuttered several times. When you begin reading again, try very hard not to stutter! Okay, start reading.

The Ss in Groups IV, V, and VI did not hear the entire Labeling Chastisement tape but only, "Stop reading . . . Okay, start reading." During the 25 seconds of actual Labeling Chastisement their speakers were turned off, with the result being that Ss in both treatment conditions were interrupted for the same period of time but only the Labeling Chastisement Groups (I, II, and III) heard the actual Labeling Chastisement.

The next 20 minutes comprised the Experimental Period during which the E listened to the Contingent S (Groups I and IV), counted disfluencies, and said "wrong" immediately following each disfluency. The Yoked Ss (Groups II and V) heard the same "wrong" non-contingnetly throughout the Experimental Period.

The Ss in Groups III and VI, the No"wrong"Groups were run at the same time though not yoked together. Group III Ss heard the Labeling

Chastisement while Group VI was interrupted for the same period of time but did not hear the Labeling Chastisement. During the Experimental Period, Group III and Group VI Ss received no "wrongs" and read uninterrupted for 20 minutes. The E listened to Group III Ss and counted disfluencies. All sessions were timed by the E and recorded on magnetic tape. The following questionnaire was administered to the appropriate Ss at the conclusion of the experiment:

1. How did the warning that I gave affect you? (Groups I, II, and III - 30 Ss)
2. How did the "wrongs" affect you? (Groups I, II, IV, and V - 40 Ss)
3. Why and when did I say wrong? (Groups I, II, IV, and V - 40 Ss)
4. Did you feel pressure to read well? (all Groups - 60 Ss)
5. What did you do to read well? (all Groups - 60 Ss)
6. Did you feel an animosity towards me? (all Groups - 60 Ss)

Statistical Treatment

Disfluencies produced by the Ss during the Baseline and Experimental Periods were recorded separately by the E. In addition, the 20 minute Experimental Period was divided into four 5 minute segments and disfluencies were tallied separately for each to facilitate the identification of trends within the Experimental Periods.

The collection of the Baseline data was to serve three purposes. First, a pre-experimental fluency measure would allow the E to determine if high and low fluency Ss responded differently to the experimental manipulations, and second, to determine if all six groups were equal with respect to pre-experimental fluency level. Third, Baseline data would enable the computation of an analysis of covariance test on the data

collected. The analysis of covariance test was to be preferred over the analysis of variance test because it would allow for the adjustment of the Experimental Period disfluency counts for any effect due to the Ss' pre-experimental (Baseline) fluency level. One of the basic assumptions of the analysis of covariance test is that the within-group regressions are homogeneous (Winer, 1962). As shown in the Appendix, a summary of the data gathered in the experiment, this assumption was not met because the regressions for each group were not similar. Consequently, a 3 X 2 factorial analysis of variance (Winer, 1962) was used to analyze the data. Orthogonal comparisons (Winer, 1962, p.65) between groups within significant main effects were planned in advance according to the hypotheses.

Responses

A disfluency was defined as a repetition of a sound, syllable, word, or phrase, or a sound judged unduly prolonged. This definition of a disfluency is in full agreement with Johnson's (1959) data, which reported that " . . . repetitions and sound prolongations are more likely than any other varieties of nonfluency to be noticed and evaluated as 'stuttering' by a given listener (p.244)." Neither reading rate nor total words read were considered because of evidence presented by Siegel and Martin (1965a, 1968) which showed that their results were independent of reading rate or words spoken.

Reliability tests of the disfluency counts were performed after the initial disfluency counts had been recorded. A total of 20 five minute Experimental Period segments were selected at random from the tapes of Ss in Groups II, III, V, and VI. The disfluencies on these tapes were scored by a judge instructed to count the number of repetitions of sounds, syllables, words, or phrases and sounds unduly prolonged. This procedure

yielded a correlation co-efficient of .92 between the 20 pairs of disfluency counts.

An objective check on the disfluency counts of the Contingent Ss (Groups I and IV) during the Experimental Period was impossible because "wrong" was recorded on the tapes immediately following what the E had initially classified as a disfluency. Consequently, a reliability measure was obtained from the Baseline Periods for these Ss. A total of 10 Baseline Periods were selected at random from the 20 available and scored by the same judge. This procedure yielded a correlation co-efficient of .96 between the 10 pairs of scores.

CHAPTER III

RESULTS

Experimental Period

The data gathered in the experiment is shown in Figures 3, 4, and 5. Figure 3 compares the cumulative performance of the three Labeling Chastisement Groups with the three No Labeling Chastisement Groups and shows that Ss in these groups performed roughly equivalently throughout the Experimental Period. Figure 4 graphs the cumulative disfluencies of the two Contingent "wrong," two Yoked "wrong," and two No "wrong" Groups, and shows a decrease in disfluencies over time for Ss in the Contingent "wrong" Groups as compared with other groups. Figure 5 shows the cumulative disfluencies over time for all six groups and again, the reduction of disfluencies by the two Contingent "wrong" Groups in comparison to the other groups is apparent.

The data was analyzed using a 3 X 2 factorial analysis of variance design, summarized in Table I. The results of this analysis failed to support the two hypotheses being tested. There was no significant difference between the effect of the Labeling Chastisement and the No Labeling Chastisement procedures on disfluencies (A main effect), as seen in Figure 3. The significant B main effect, $F(2,54) = 6.63$, $p < .01$, signifies that there was a difference in mean disfluencies between Ss in the

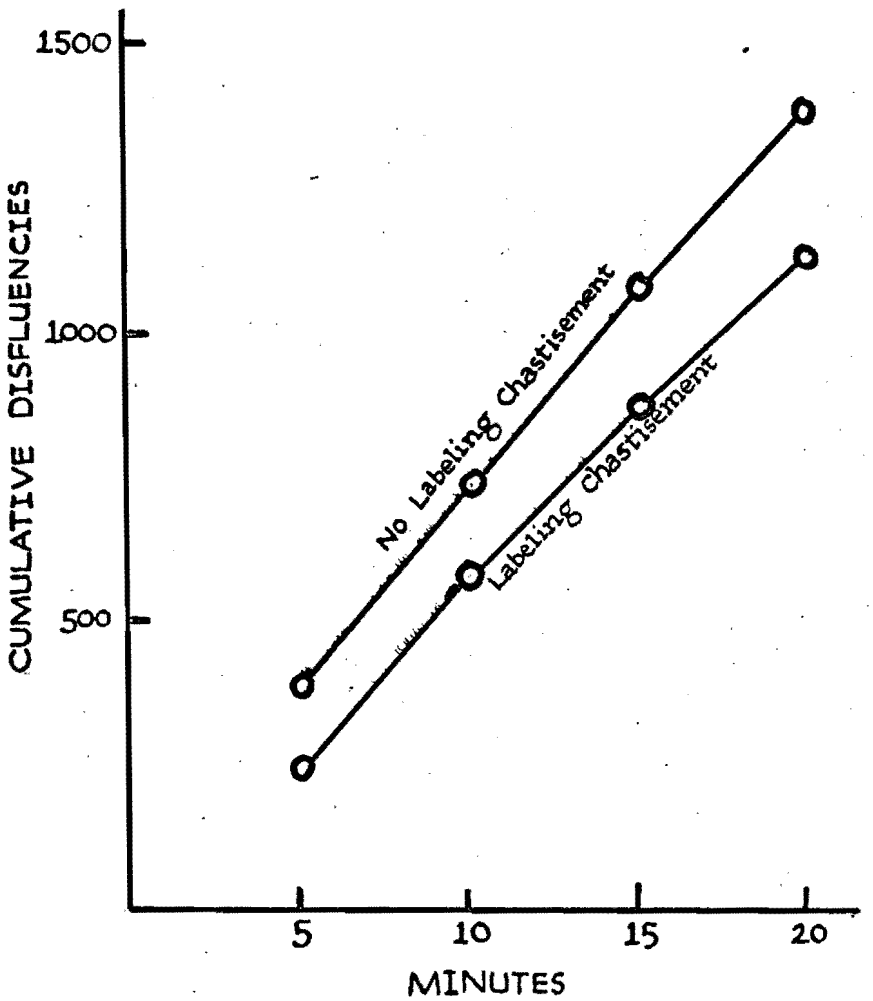

Figure 3. Cumulative disfluencies for Labeling Chastisement and No Labeling Chastisement conditions.

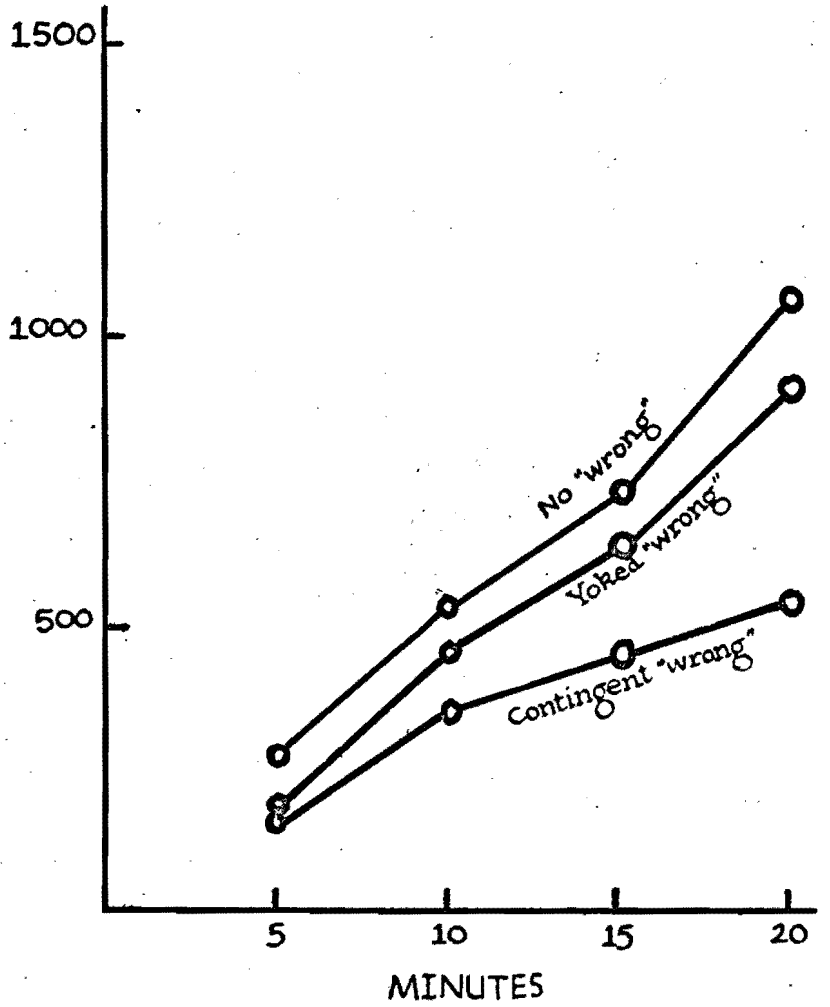

Figure 4. Cumulative disfluencies for Contingent "wrong," Yoked "wrong," and No "wrong" conditions.

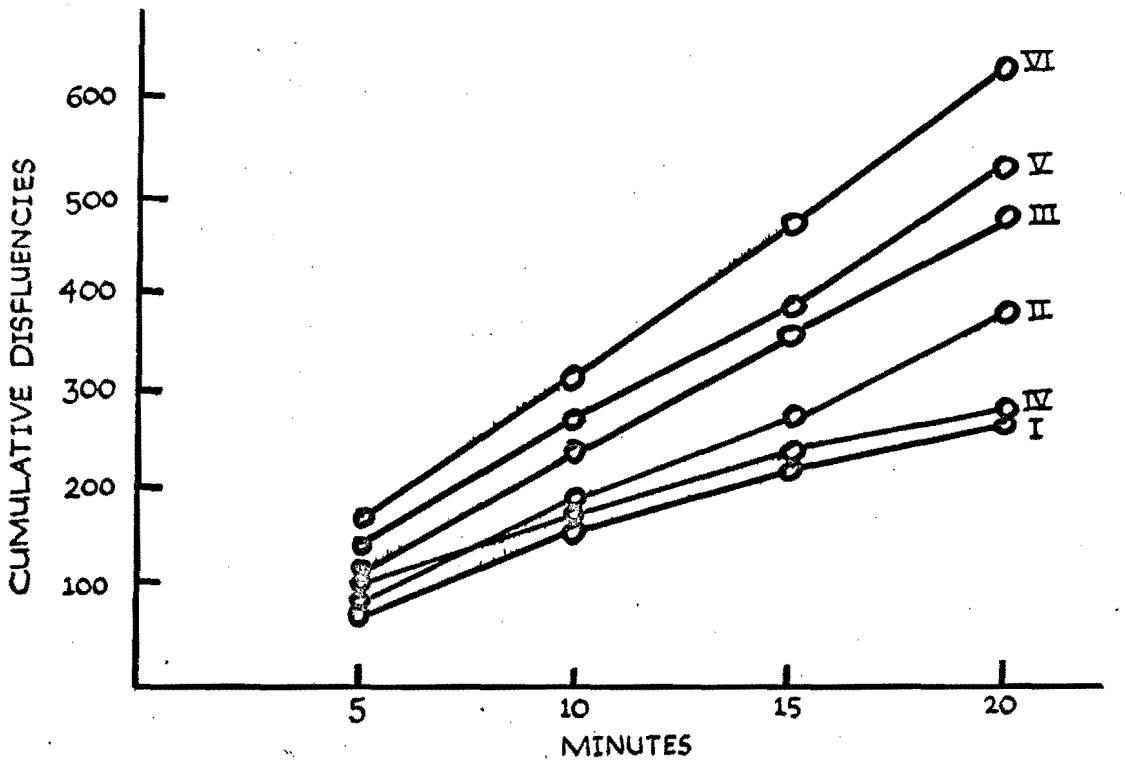

Figure 5. Cumulative disfluencies over time for all 6 groups showing total disfluencies after 20 minutes reading.

Contingent "wrong," Yoked "wrong," and No "wrong" Groups (see Figure 4). Orthogonal comparisons indicate that the Contingent "wrong" Groups scored significantly fewer disfluencies than the Yoked "wrong" or No "wrong" Groups, $F(1,54) = 11.75$, $p < .01$, and that there was no significant

TABLE I

ANALYSIS OF VARIANCE

Source	df	MS	F
A Labeling Chastisement	1	1288.07	2.29
B "wrong"	2	3735.65	6.63**
A X B Interaction	2	289.22	<1
Error	54	563.23	

**p<.01

difference in disfluencies between the latter two groups, $F(1,54) = 1.52$, $p > .10$. The AB interaction effect was not significant.

Baseline Period

A critical examination of the Baseline data revealed no observable differences between high and low pre-experimental fluency level Ss with respect to their performance during the Experimental Period. In addition, an analysis of variance performed on the Baseline data indicated that there was no significant difference in pre-experimental fluency levels between the six groups.

Questionnaire

The answers to the questionnaire are summarized as follows:

1. Of 30 Ss in the Labeling Chastisement Groups I, II, and III, 16 answered as having believed the chastisement.
2. There seemed to be no difference between the four "wrong" Groups I, II, IV, and V in their answers to this question. Answers from Ss in all four groups ranged from "didn't bother" to "shook up."
3. All of the Contingent "wrong" Ss in Groups I and IV showed by their responses to this question that they were aware of the contingency involved. However, six of these Ss incorrectly included a skipped word or a mispronounced word as a basis for "wrong." Eleven of the 20 Ss in the Yoked "wrong" Groups II and V identified the "wrongs" as being random. The other Ss in these groups identified such things as "goofs," "hesitations," "voice tone change," "back tracking," and "stopping for a period or a comma" as reasons for "wrongs."

4. All but eight of the total number of 60 Ss reported a desire to read well. The "no" answers to this question were distributed evenly among the six groups.
5. Again, these answers were similar for all six groups. The most common methods of improving reading were "slowed down," "concentrated harder," "relaxed," and "looked ahead."
6. Five of the 10 Ss in Group I (Labeling Chastisement plus Contingent "wrong") reported some animosity towards the E. Only two Ss in Group III, one S in Group IV, and one S in Group V responded affirmitively to this question.

CHAPTER IV

DISCUSSION AND IMPLICATIONS

I. DISCUSSION

In this study, labeling the disfluencies of normal speaking college students as "stuttering" and chastising these same students for "stuttering" did not cause an increase in those disfluencies. In addition, this Labeling Chastisement procedure did not alter the effect that the word "wrong" had upon disfluencies. Contingent "wrong" caused a decrease in disfluencies, while non-contingent "wrong" had no effect upon disfluencies, regardless of whether or not these contingencies were preceded by Labelling Chastisement. As a result, the present study supports further the conclusions drawn earlier by Siegel and Martin (Siegel, 1969); that is, while the contingent presentation of "wrong" (or other stimuli) following a disfluency by a normal speaker serves to decrease the occurance of disfluencies, non-response-contingent presentation of the same stimulus has no effect on disfluencies. Several methodological and theoretical considerations suggested by the present experiment will be discussed in the following sections.

Methodological Issues

Siegel (1970) posits a 'highlighting' effect to explain the

reduction in disfluencies of normal speakers as a result of contingent stimulus presentation. This highlighting explanation holds that virtually any event that brings disfluencies to the speaker's attention will cause their reduction, possibly because the disfluencies of normal adult speakers are "carriers of their own punishment," such that increasing the speaker's attention to these responses brings forth their punishing property.

This conclusion, supported by the present experiment, appears in direct opposition to the theories advanced by Johnson (1959) and others (Wischner, 1950; Bloodstein, 1958; Shames and Sherrick, 1963) which posit that stuttering originates, in part, when the normal disfluencies of young children are punished and brought to the attention of the child. One of the most obvious explanations for this discrepancy lies in the fact that there are vast differences between the normal speaking college students used in these studies and young children learning to talk.

College students have, by and large, mastered the complex grammatical, vocabulary, and verbal skills required to talk normally, while young children have just begun to undertake the task. College students have all had at least 15 years of talking experience, during which time they have practiced their verbal skills, and as a result of behaviorally-produced experiences have formed a concept of themselves (Bandura, 1969) as being adequate speakers. On the other hand, young children with zero years of correct talking experience do not know what kind of speakers they are, and depend upon others for feedback concerning their speech. In addition, college students have learned the difference between correct and incorrect vocal responses, while young children may have not yet acquired the ability to discriminate between a right and wrong utterance.

As a result of this, children learning to talk have at their disposal an extremely narrow range of verbal response alternatives in comparison to college students. Consequently, these two groups are likely to respond differently to similar types of contingencies applied to their speaking behavior. College students, when made aware of an incorrect verbal response (e.g., a disfluency) have the capacity to replace that undesirable response with a more acceptable and rewarding one (e.g., fluency). The significant reduction in disfluencies during the Experimental Period shown by the Contingent "wrong" Ss (Groups I and IV) supports this conclusion. On the other hand, young children, because of their lack of an appropriate alternative response to their disfluencies, or inability to identify the correct and incorrect responses, may be more likely to respond by altering their behavior in a maladaptive way in order to avoid detection and punishment on future occasions (Bandura, 1969, p.315). Following this reasoning, it is understandable that the speech of normal speaking college students was not fundamentally disrupted by either the Labeling Chastisement procedure or response-contingent presentation of "wrong" administered in the present study.

The ability of normal speaking college students to discriminate between a correct and an incorrect verbal response also offers a reasonable explanation for the failure of non-response-contingent presentation of "wrong" to significantly affect disfluencies. On the surface, it would seem that random aversive stimulation would cause a dilemma for the speaker, for no matter how well he talks, he is punished intermittently. In the present study, however, 40% of the Ss who heard "wrong" periodically throughout their reading said that it did not bother them at all. Perhaps because of their ability to discriminate correct from incorrect

verbal responses, these normal speakers realized that they were not really doing anything wrong. Indeed, 11 Ss who received non-response-contingent "wrong" correctly identified the "wrongs" as being random, while three other Ss in the non-contingent (Yoked) Groups replied that the "wrongs" were merely part of the experiment.

Subject Characteristics

Wendell Johnson (1957) states that the listener most likely to have the greatest influence on the onset of stuttering is "a listener who disapproves of it [disfluency] and who does so as an authority figure upon whose attitudes and reactions the child depends significantly for his sense of security and adequacy (p.904)." In the present study, it is doubtful that the E appeared to many of the Ss as this type of an "authority figure." This surmise is supported by the fact that only slightly more than half of the Ss receiving Labeling Chastisement actually believed it. The important point here is that some Ss did believe the Labeling Chastisement, which suggests the existance of individual differences between Ss which may have affected their responses to the experimental manipulations.

The Labeling Chastisement procedure, which was expected to provide a more clear-cut meaning for the word "wrong," apparently caused the word to become more ambiguous. The Ss hearing the Labeling Chastisement tape following Baseline and preceding "wrong" (Groups I and II) performed less consistently during the Experimental Period in relation to their Baseline levels ($r = .47$ and $.68$) than did Ss who did not hear the Labeling Chastisement tape (Group IV, $r = .96$; Group V, $r = .83$). By this measure also, Labeling Chastisement affected each S in a different and unpredictable manner.

Some hint to the extent of individual differences between Ss comes also from the Ss different reactions to "wrong." For instance, five of the 10 Ss in Group I (Labeling Chastisement plus Contingent "wrong") reported that the "wrongs" had no effect on them, while one S in this same group said the "wrongs pointed out a fact and gave me a different opinion of myself--I realized I did stutter!" Discussing individual differences, Bloodstein, Alper, and Zisk (1965), in an excellent paper on the origin of stuttering, feel that a child's vulnerability to environmental influences is an important variable in the onset of the behavior:

> . . . a source of the attitudes and beliefs which underlie anticipatory struggle behavior [stuttering] is to be found in many cases in the personality of the child himself, in the form of insecurity, excessive need for approval, dependence, fearfulness, or a low threshold of tolerance for frustration. Such traits are not to be found in all stutterers by any means, but when they are present they serve to make a child especially vulnerable to environmental pressures, and especially quick to accept a concept of himself as a failure--at speech or anything else. (p.48)

The S mentioned previously, even though willing to accept that he stuttered, performed like the other Ss in Group I, that is, decreased his disfluencies over time. Apparently, even normal speaking college students who are exceedingly vulnerable to environmental influences and suggestions are able to modify their disfluencies when made aware of them.

It is interesting to note that many of the Ss in the Contingent "wrong" Groups I and IV showed some avoidance and substitutive behaviors. These Ss found that by not correcting words after discovering a mistake in their reading, or by adding words of their own to cover a mistake, they could avoid "wrong," since deviations from the reading material were not considered disfluencies. It appears that these Ss were anticipating disapproval in the form of "wrong" and then modifying their behavior to avoid that disapproval. This assumption is supported by the answers to

question number five on the questionnaire. Among the most common answers for all groups of Ss to this question on how they improved their reading were "concentrated harder" and "looked ahead."

Theoretical Implications

Anticipation of difficulty and disapproval, as well as vulnerability to environmental pressures, are factors which Bloodstein, Alper, and Zisk (1965) feel contribute to the onset of stuttering. These theorists agree with Johnson (1959) that normal childhood disfluencies may be evaluated as abnormal by overly-critical parents, but add that various other speech experiences (e.g., errors of articulation, retarded language development, pronunciation difficulty) may contribute towards instilling in a child a habitual anticipation of speech difficulty (p.47). Assisting the child to regard these errors as failures is an environment which places much importance on correct speech and exerts pressure on the child to speak properly.

Bloodstein (1958) points out that ours is a society which places a very high premium on correct speech. Many aspects of speech such as vocabulary, grammer, pronunciation, rate, articulation, as well as fluency must be mastered by the child learning to talk. If he falls behind, or if the parents perceive that he has fallen behind, in any of these skills, and if he is then subjected to parental attempts to hurry speech development, the suggestions that speech requires laborious preparation and special effort may be powerfully established (Bloodstein, 1958, p.26).

Continuing, Bloodstein, Alper, and Zisk (1965) maintain that certain traits present in the personality of some children may cause them to be especially susceptible to the above process. The result, they feel, is that these children view speech as a difficult task which requires

special effort, in the form of "anticipatory struggle behavior." Anticipatory struggle behavior is the attempt to avoid anticipated failure on a word or sound by using so much force and such elaborate preparations that it is consequently not possible to say it correctly (p.32). Labeling a child a "stutterer" obviously compounds the problem; for just as anticipation or expectancy, both on the part of the individual and significant others, influences behavior (Rosenthal and Jacobson, 1968; Feather, 1966; Ford, 1963), behavior influences self-concept (Bandura, 1969), which in turn influences expectations, and so on.

Wendell Johnson (1956) has also stated that stuttering is an avoidance reaction performed in the fearful anticipation of speech interruption, or, essentially, that it is the effort not to stutter (216 ff). Experimental evidence that the occurance of stuttering is preceded by the anticipation of stuttering is abundant (Knott, Johnson, and Webster, 1937; Johnson and Knott, 1937; Johnson, Larson and Knott, 1937; Johnson and Millsaps, 1937; Johnson and Sinn, 1937; Brown, 1945; Bloodstein, 1950).

In relation to what has been said earlier in this paper concerning a young child's limited verbal response repetoire, it becomes understandable how a child subjected to pressures to exceed his speech or language capabilities while at the same time convinced that he cannot speak properly may resort to maladaptive behavior patterns in an effort to avoid detection and the consequent disapproval. It must be remembered that these responses are produced in anticipation of speech difficulty, not as a result of it. Those responses which succeed in avoiding parental disapproval are reinforced and temporarily become a part of the child's speech behavior (Shames and Sherrick, 1963).

II. FUTURE RESEARCH

After consideration of the numerous theoretically-important differences between young children learning to speak and normal speaking college students, it becomes apparent to this author that further experimentation with normal speaking adults engaged in verbal tasks in hopes of uncovering clues to the hypothetical relationship between normal disfluency and stuttering might prove to be fruitless. Although comparable studies using children as Ss would be desirable and undoubtably enlightening, such experimentation has not been done for obvious ethical reasons.

As pointed out and discussed by Siegel (1970, p.706), studies of the interactions between children and adults in natural settings could provide valuable information concering the onset of stuttering and definately should be undertaken. Day-care facilities for pre-school children would provide excellent opportunities for this type of research.

A second, less direct, approach calls for the study of adults engaged in a non-verbal task comparable to the learning of speech by young children. This approach would enable researchers to test experimentally the variables believed to be active in the onset of stuttering, without encountering the numerous confounding factors discussed in the previous section. In addition, it is possible that the results and conclusions drawn from a study of this sort could be useful to researchers studying the etiology of maladaptive behaviors other than stuttering. An ideal paradigm would be one in which the following conditions are met:

1. The S is unfamilar with the task involved or with related tasks.
2. The responses require fine motor coordination.
3. Correct response alternatives are limited or not known to the S.

4. Discriminations between correct and incorrect responses are difficult for the S to make.

5. Aversive consequences are made contingent upon errors.

6. The S is under pressure to perform well.

7. The S expects the task to be difficult.

8. An interaction in which the E tells the S that he is performing poorly and attaches some sort of label to this performance.

9. The S views the E as an authority figure.

Experiments have been reported which study some, but not all of the above mentioned variables. Spiker (1956) demonstrated that a child confronted with a difficult discrimination task will make a large number of errors on early trials, producing frustration responses which interfere with performance on the task. Cottrell (1967) found that verbalized expectation of performance did not effect subsequent performance. Feather (1966) reported that initial success on a task resulted in improved performance, while initial failure had the opposite effects. Ford (1963) demonstrated that the amount of frustration produced in children by failure is related to their expectancy of success. Phares (1956) tested the effect of telling Ss that the task they were about to attempt was extremely difficult upon the Ss expectancy of success and subsequent behavior.

Studies testing the effects of a combination of all nine of the above mentioned variables upon task performance have not been reported. Comprehensive studies which include these variables are needed and would undoubtably supply valuable information concerning the variables active in the onset of stuttering.

The effects of individual differences also deserve increased experimental attention. The idea that certain traits present in the personality

of the child render him susceptible to environmental influences which are correlated with the onset of stuttering is prevalent in numerous theoretical formulations (e.g., Bloodstein, Alper, and Zisk, 1965; Johnson, 1959). Although some studies (e.g., Sheehan and Zelen, 1955; Boland, 1952; Dahlstrom and Craven, 1952) report that stutterers possess certain response dispositions, there is no way to determine whether these traits existed prior to the stuttering, and played a role in the onset of the behavior. Studies designed to examine the influence of personality traits which are said to contribute to the development of stuttering (e.g., sensitivity, insecurity, tolerance for frustration) are needed, and could be performed using a paradigm similar to that described above.

Chapter V

SUMMARY AND CONCLUSIONS

The present study was designed to explore further the hypothetical relationship between normal disfluency and the onset of stuttering. Many stuttering theorists (e.g., Wischner, 1950; Bloodstein, 1958; Johnson, et. al., 1959; Shames and Sherrick, 1963) feel that stuttering is a learned intensification or exaggeration of what began as normal disfluencies found in most young children; however, there is little agreement on the exact process that is involved. Wischner (1950) feels that anxiety, caused by parental disapproval of disfluency, leads to a conflict which results in changes in the child's speech pattern. Bloodstein, (1958) feels that as a result of early speech difficulty and parental pressure, a child learns to view speech as a difficult task, which results eventually in "anticipatory struggle reactions," or stuttering. Shames and Sherrick (1963) feel stuttering originates when a complex schedule of aversive and rewarding consequences are made contingent upon disfluencies. Johnson (1959) agrees with these theorists but feels that, in addition, an overly-critical listener who reacts negatively to disfluencies and labels those disfluencies as "stuttering" is essential to the onset of stuttering.

Many studies (Hill, 1954; Savoye, 1959; Stassi, 1961; Flanagan,

Goldiamond and Azrin, 1959; Siegel and Martin, 1965a, 1956b, 1966, 1967, 1968; Martin and Siegel, 1969; Brookshire and Martin, 1967; Brookshire, 1969) have demonstrated that the disfluencies of normal speakers comprise a response class which is modifiable by the experimental manipulation of environmental stimuli. In summary, these studies reported that a variety of stimuli, when presented immediately following a disfluency (contingent), will cause a reduction in those disfluencies, while random (non-contingent) presentation of these same stimuli appears to have no effect (Siegel, 1969).

It was noted, however, that the labeling of normal disfluencies as "stuttering" by a critical listener, the variable which Johnson (1959) contends is essential in the onset of stuttering, has not been experimentally tested.

The present experiment, therefore, tested the effect that a "Labeling Chastisement" procedure would have upon the repetitions and prolongations of normal speaking college students engaged in a reading task. It was hypothesized that:

1. The introduction of a Labeling Chastisement procedure which admonishes normal speakers for "stuttering" will cause an increase in disfluencies.
2. The increase in disfluencies as a result of the Labeling Chastisement procedure will be intensified when followed by non-response-contingent presentation of "wrong."

The Ss were 60 normal speaking college students. Ten Ss were randomly assigned to each of the following groups:

I. Labeling Chastisement plus Contingent "wrong"

II. Labeling Chastisement plus Yoked "wrong"

III. Labeling Chastisement - No "wrong"

IV. No Labeling Chastisement - Contingent "wrong"

V. No Labeling Chastisement - Yoked "wrong"

VI. No Labeling Chastisement - No "wrong" (control)

The Ss in all six groups read aloud for 23 minutes, a three minute Baseline Period and a 20 minute Experimental Period. Yoked Ss were run at the same time as Contingent Ss, but in separate rooms. The experimental arrangement was such that during the Experimental Period the "wrong" heard by Contingent Ss immediately following a disfluency was heard also by the Yoked Ss, although it was not response-contingent. Following Baseline, the Labeling Chastisement Ss heard a tape which chastised them for "stuttering" and asked them to "try very hard not to stutter." A questionnaire was administered to all Ss at the conclusion of the experiment.

The two hypotheses being tested were not supported. Labeling Chastisement did not cause more disfluencies than No Labeling Chastisement. In addition, non-response-contingent presentation of "wrong" immediately following Labeling Chastisement did not cause an increase in disfluencies. The only statistically significant result obtained was a decrease in disfluencies recorded by the Contingent "wrong" Ss.

This experiment supports the earlier conclusions drawn by Siegel and Martin (Siegel, 1969); that is, response-contingent stimuli reduce the disfluencies of normal speakers, while non-response-contingent stimuli have no effect upon disfluencies. Although this observation seems to be in direct opposition to the onset of stuttering theories (Wischner, 1950; Bloodstein, 1958; Johnson, 1959; Shames and Sherrick, 1963) which maintain that stuttering originates, in part, when the normal disfluencies of

young children are punished and brought to the attention of the child, it was pointed out that one possible reason for this discrepancy lies in the numerous differences between normal speaking college students and children learning to talk.

Normal speaking college students have all had years of speaking experience, during which time they have mastered the complex skills required to speak correctly and have formed large verbal repertoires from which to choose appropriate responses. It follows then that these students would be able to replace an undesirable response (disfluency), when made aware of it, with a more acceptable one (fluency), as in the present study. In addition, these Ss, because of their ability to discriminate between a correct and an incorrect verbalization, may have realized that non-response-contingent presentation of "wrong" was merely part of the experiment, and not a consequence of their behaviors.

Conversely, young children just learning to talk have not yet mastered the skills required to speak correctly. They may be unable to discriminate between a correct and an incorrect verbalization and have at their disposal limited verbal response alternatives. Consequently, these children may be more likely than normal adult speakers to respond to the disapproval of disfluencies by altering their behavior in a maladaptive way to avoid detection on future occasions.

The wide range of responses to the questionnaire, as well as the fact that some Ss were especially vulnerable to the Labeling Chastisement as well as the "wrongs," suggested the existence of extensive differences between individual Ss, which were reflected in the manner in which they reacted to the experimental manipulations.

Many Ss in the Contingent "wrong" Groups found that by substituting

words and by not backtracking they could avoid "wrong." It was suggested that these Ss anticipated disapproval in the form of "wrong" and then modified their behavior to avoid that disapproval.

Anticipation of difficulty in speaking, and vulnerability to environmental pressures are two factors which Bloodstein, Alper, and Zisk (1965) feel contribute to the origin of stuttering. Although some of the normal speakers in the present study showed one or both of these behaviors, they were able to speak fluently under pressure to do so, presumably at least partially because of their access to large verbal repertoires. On the other hand, Bloodstein, Alper, and Zisk feel that young children who view speech as a difficult task, who anticipate difficulty in speaking, and who are subjected to parental pressures to speak correctly, may respond by engaging in "anticipatory struggle behavior," or stuttering.

Because of the several important differences between normal speaking adults and young children learning to talk, it appears fruitless to this author to continue experimentation with normal speaking adults engaged in verbal tasks in hopes of gaining insight into the hypothetical relationship between normal disfluency and stuttering. Two alternative approaches were suggested. First, studies of interactions between children and adults in natural settings would undoubtedly provide valuable information concerning the onset of stuttering. A second approach calls for the study of adults engaged in a non-verbal task which involves interactions and requires behaviors comparable to those involved in the learning of speech by young children. Nine variables were suggested which would provide an ideal paradigm for this type of study. This approach would enable researchers to test experimentally the factors believed to be active in the onset of stuttering without encountering the numerous confounding

variables discussed previously.

Finally, as suggested by other authors (Johnson, 1959, p.264; Siegel, 1970, p.688), the problems related to understanding the onset and maintenance of stuttering are not unique to stuttering behavior. These problems exist whenever one considers obviously maladaptive behaviors, such as obesity, masochism, or shyness. It is the author's contention that there are many parallels between these behaviors and stuttering, and it is the author's hope that findings in the area of stuttering will be of use to researchers studying these other behavior problems.

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APPENDIX

SUMMARY OF DATA

			I Contingent "wrong"	II Yoked "wrong"	III No "wrong"
LABELING CHASTISEMENT	Baseline		60	52	75
	EXPERIMENTAL PERIOD	5 minutes	77	73	104
		10 minutes	145	168	230
		15 minutes	212	268	255
		20 minutes	269	382	470
		r* =	.47	.68	.58

			IV	V	VI
NO LABELING CHASTISEMENT	Baseline		62	71	82
	EXPERIMENTAL PERIOD	5 minutes	96	123	154
		10 minutes	157	267	300
		15 minutes	218	385	460
		20 minutes	274	514	611
		r =	.96	.83	.51

* r = Pearson product-moment correlation coefficient between Baseline and Experimental Period disfluency counts.